CLAIMS

1. A vector, preferably a plasmid vector, for *in vivo* administration to a host, comprising:

a nucleotide sequence encoding an RSV F protein lacking an autologous RSV F signal peptide sequence and including a nucleotide sequence encoding a heterologous signal peptide which enhances the level of expression of RSV F protein in the host; and

a promoter sequence operatively coupled to the nucleotide sequence for expression of said RSV F protein in the host.

2. The vector claimed in claim 1, wherein said nucleotide sequence encoding a heterologous signal peptide encodes Herpes Simplex Virus I (HSV I) gD.

3. The vector claimed in claim 1 or 2, wherein said first nucleotide sequence encodes a RSV F protein fragment lacking a transmembrane coding region.

4. The vector claimed in any one of claims 1 to 3, wherein said promoter sequence is an immediate early cytomegalovirus promoter.

5. The vector claimed in any one of claims 1 to 4, further including a second nucleotide sequence to enhance the immunoprotective ability of said RSV F protein when expressed *in vivo* from said vector in a host, preferably comprising a pair of splice sites to prevent aberrant mRNA splicing, more preferably that of rabbit β-globin intron II, preferably located between said first nucleotide sequence and said promoter sequence.

6. The vector claimed in any one of claims 1 to 5 which is plasmid p82M35B as shown in Figure 10 (ATCC 203790).

7. An immunogenic composition for *in vivo* administration to a host for the generation in the host of a protective immune response to RSV F protein, comprising a vector as claimed in any one of claims 1 to 6 and a pharmaceutically-acceptable carrier therefor.

8. A method of producing a vaccine for protection of a host against disease caused by infection with respiratory syncytial virus (RSV), which comprises:

isolating a first nucleotide sequence encoding an RSV F protein having an autologous RSV F signal peptide sequence;

substituting a nucleotide sequence encoding a heterologous signal peptide which enhances the level of expression of RSV F protein for the nucleotide sequence encoding the autologous RSV F signal peptide sequence to form a second nucleotide sequence;

operatively linking said second nucleotide sequence to at least one control sequence to produce a non-replicating vector, preferably a plasmid vector, the control sequence directing expression of said RSV F protein when introduced into a host to produce an immune response to said RSV F protein; and

formulating said vector as a vaccine for *in vivo* administration.

9. The method claimed in claim 8, wherein said nucleotide sequence encoding a heterologous signal peptide encodes Herpes Simplex Virus I (HSV I) gD.

10. The method claimed in claim 8 or 9 wherein said nucleotide sequence encoding an RSV F protein encodes an RSV F protein lacking the transmembrane region.

11. The method claimed in any one of claims 8 to 10 wherein said at least one control sequence comprises the immediate early cytomegalovirus promoter.

12. The method claimed in any one of claims 8 to 11 including the step of:

operatively linking said nucleotide sequence to an immunoprotective enhancing sequence, preferably comprising a pair of splice sites to prevent aberrant mRNA splicing, more preferably that of rabbit β-globin intron II, to produce an enhanced immunoprotection to said RSV F protein in said host, preferably between said control sequence and said nucleotide sequence.

13. The method claimed in any one of claims 8 to 12, wherein said non-replicating vector is the plasmid vector p82M35B, as shown in Figure 10 (ATCC 203790).

14. A vaccine produced by the method claimed in any one of claims 8 to 13.